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GATHERING PINE SEEDS FOR PLANTING

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The American Museum Journal

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Mary Cynthia Dickerson, *Editor*

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DESIGN FOR NEW EASTERN FAÇADE OF THE MUSEUM, FACING CENTRAL PARK. PRELIMINARY SKETCH, TROWBRIDGE AND LIVINGSTON, ARCHITECTS

In the design of this Eastern Façade, the architects have endeavored to retain the general Romanesque architecture of the Southern Façade, while modifying it in the direction of greater simplicity. The design contemplates the future incorporation of the Museum within the general design of Central Park by the construction of a broad entrance roadway from the West Drive

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PLANS FOR EXTENSION OF THE MUSEUM

PRELIMINARY STUDIES TOWARD AN EXPANSION OF THE AMERICAN MUSEUM SUCH THAT FORCE AND A WIDE SCOPE WILL BE GIVEN TO THE INSTITUTION'S EDUCATIONAL WORK IN THE GREAT NEW YORK OF THE FUTURE

By Henry Fairfield Osborn

WITH this number is presented a preliminary study by Messrs. Trowbridge and Livingston, architects, for the new East Façade of the Museum, facing Central Park. The design has not been adopted either by the Committee on Buildings and Plans or by the Trustees, but its preparation at this stage is welcomed because of the opportunity which it affords for a prolonged and careful consideration of the artistic requirements of a monumental building, and of the scientific and educational requirements of ideally related exhibits within this building. The design for the East Façade contemplates the future incorporation of the Museum within the general design of Central Park by the construction of a broad entrance roadway from the West Drive. Ultimately, no doubt, the lower reservoir in Central Park will be removed and an avenue of approach will connect the east and west sides of the Park and thus unite the Museum of Science with its sister Museum of Art at Eighty-second Street. This is in the far future, but nevertheless it deserves the early consideration of all those who are interested in the artistic growth of what is probably destined to be the greatest city of the world.

In the design of this Eastern Façade, the architects have endeavored to retain the general Romanesque architecture of the Southern Façade, while modifying it in the direction of greater simplicity. It is obvious that a building of the vast proportions contemplated in the original plans of Calvert Vaux in 1871 and authorized by the Legislature in connection with the setting aside of Manhattan Square, must have an entrance of monumental size, and that this entrance must have a broad and dignified avenue of approach.

The Museum will thus have three entrances. On Sundays and holidays when people come in large numbers from the direction of the Park, the Eastern Entrance will be most convenient together with the present

historic South Entrance, with its included Memorial Hall constituting a monument to the administration of President Jesup. During the entire summer season these two entrances, the Southern attracting by its shaded approach, will be most accessible; while for purposes of attendance at public lectures and for large classes from public schools, the contemplated Western Entrance will prove the most practical and readily accessible to the arteries of transportation of the city of the future.

Since assuming office in 1908 the President's interest has largely centered in a series of studies for the future development of the interior of the Museum[1] to provide at once for expansion and to look toward an ideal future in an arrangement made both from the standpoint of a natural sequence and of an artistic impression upon the minds of visitors. A great natural history museum should impress the visitor with the grandeur and beauty, and with the orderliness and system of the processes of nature. Especially is natural sequence important, not only sequence of the exhibitions in each hall but also of the successive halls themselves. This is an educational principle of the utmost value. It is as important in natural history as it is in art. Visitors to the Berlin Museum will recall the simplicity and direct educational value of the arrangement of the picture galleries according to the sequence of Schools of Art in various countries. Exactly the same idea applies to a museum of natural history, yet with the exception of the Museum of Comparative Zoölogy of Cambridge, arranged by the late Alexander Agassiz, no large scientific museum, to our knowledge, has yet embodied the idea of the natural relations of subjects or of the consequent natural groupings.

In a geographic sequence for instance, the visitor would pass from country to country, as in course of travel. In studying the prehistoric life of North America, he would naturally pass from east to west; he would study the former inhabitants of Manhattan Island and the neighboring tribes along the eastern coast; then pass to the Central West, to the region of the Great Plains, to the Indians of the Southwest, and finally, to the past and present history of Mexico and Central America. Such geographic arrangement can be made to prevail naturally to a large extent on the western or anthropological side of the Museum and also in certain halls on the

[1] There are now in preparation two publications in which the proposed interior arrangement of the Museum will be set forth. The first of these is the second or Curators' edition of the work entitled "History, Plan and Scope of the American Museum of Natural History," the Trustees' edition of which was published in 1910. The second publication is an illustrated folder showing the gradual steps which have been made in the development of the buildings of the Museum, beginning with the completion of the original South Transept in 1877 and ending with the presentation of the proposed future arrangement of the halls in the completed central portion and southern half of the Museum, the plans for which are now in the hands of the architects. The northern half of the Museum is left entirely for future consideration.

zoölogical side. In the latter, a geographic arrangement is known as faunistic. The visitor may first enter the life of Africa and Australia, follow into the life of Southern Asia, which we know historically to be only a detached portion of prehistoric African life; he may then pass to the life of Northern Asia which will bring him to the Polar Region, from which he will enter naturally the life of North America and pass southward into Central and South America.

There is, however, another kind of sequence to which other series of halls of the Museum may be devoted — namely, the sequence of evolution. Thus on the anthropological side the visitor may compare the more primitive races of man, including the origin of man, with the more civilized races; he may follow the slow steps of progress from our very remote ancestors of two hundred thousand years ago through the so-called Eolithic stages until he reaches Man of the Bronze and of the Iron Ages. Similarly he may trace the first steps of nature and the subsequent stages from the lower into the higher forms of plant and animal life.

The most impressive example of evolutionary sequence will be the series of connecting halls, to which it is hoped the Fourth Floor on the east side of the Museum may be devoted. Here the visitor will pass from the dawn of life reaching back millions of years, and in successive halls traverse the Ages of Molluscs, of Fishes, of Amphibians, of Reptiles, finally reaching the first Age of Mammals, and then the Age of Man. In this final hall he may witness the earliest struggle between the primitive types of palæolithic hunters and the noble forms of mammalian life which were to be found both in Europe and North America in the early period of man.

There is still a third kind of sequence, that of systematic classification, which must be provided for in another series of halls. This is the prevailing system of all our great natural history museums of the present day, with the exception of the Agassiz Museum at Cambridge, in which the animals for the most part are arranged geographically. In the sequence of classification, the visitor will find all the animals of a certain kind, from whatever part of the world they may have been collected, assembled for comparative study. Thus for example, he will be able to compare with one another all the members of the Horse Family whether collected in Africa, in Western Europe or in Asia.

It has proved possible to provide amply in the development of the southern half of the great American Museum building of the future for all three of these various kinds of sequence — geographic, evolutionary and systematic. The plan, in its general features, will be submitted for the approval of the members of the Scientific Staff of the Museum. It has already been welcomed by experts from other institutions in this country

and abroad as marking a very important advance in the educational arrangement of natural history museums. It is believed that this arrangement will meet both the exacting demands of the specialist and also impress upon the minds of the uninitiated visitors, young and old, the greatest lesson, perhaps, that Nature has to teach us — namely, the reign of law and order.

There are, however, other objects to be attained in the new plans for the enlargement of the Museum. Chief among these are ample provisions for branches of natural sciences which heretofore have not been included within the field of any museum of natural history, but have been presented more or less successfully in isolated forms in kindred museums. These are principally the subjects of Astronomy, of Geography and of Oceanography. Berlin has its popular Astronomic Museum known as "Urania." It also has its Oceanographic Museum, established under the patronage of Emperor William as a result of the extraordinary interest aroused in oceanographic research by the voyage of Nansen and of suggestions made by Sir John Murray in Berlin at the subsequent Geographic Congress. Later a finely equipped oceanographic museum was established at Monte Carlo by the Prince of Monaco in connection with his own marine explorations. More recently the Prince has established an Institute of Oceanography in Paris. To our knowledge however, there is no museum at present devoted to Geography or to Physiography. Yet these subjects are quite as intimately related to the distribution of animals and plants and to the general laws which govern living beings as is Oceanography.

The interest of the public in Astronomy has already been witnessed in the American Museum in the models of the planetary system at present installed on the First Floor and of the rotating earth on the Second Floor. There is no doubt that a treatment of both Geography and Oceanography would subserve the public educational needs of the City. It is far better for the American Museum to bring these subjects within its walls in New York City and thus assemble all the phenomena of nature under one roof, rather than to wait until smaller institutions for these branches spring up as they are doing in Berlin, in Paris and in other cities.

Thus in addition to designs for the future building itself, careful study is being put on the ideal arrangement of subjects and collections within this building. This study takes into account the broad relations of the living and inanimate worlds as conceived in the minds of Humboldt, Darwin and other great naturalists. These relations underlie the physical welfare of man. They cannot be omitted from the plan. In fact the American Museum in the establishment of its Department of Public Health has already entered this new field of service and of public instruction, which will bring still closer within its influence the well-being of the people of New York.

OCEANOGRAPHIC WORK ON THE ALBATROSS

THE Museum Expedition under Acting Director Townsend in the United States Fish Commission Steamship Albatross continues the land collecting in Lower California and the oceanographic work in the waters adjacent according to prearranged schedule. The following quotations from Dr. Townsend's letters give suggestions of the expedition's work.

MAGDALENA BAY, L. C., *March* 18, 1911

We left San Diego March 7 for work farther south. The program is being carried out very much as originally planned, that is we spend our days ashore and our nights at sea, jogging along slowly and economically with steam on one boiler only. Four or five days at each anchorage would be better than merely one or two, but even as it is we shall have a fair representation of the sea and land fauna of Lower California. Occasionally we take half a day for a run out beyond the five hundred fathom line to dredge. Mr. Bell has already some fine molds of deep sea fishes and invertebrates; however, we shall do three times as much dredging on our return trip, not having to land shore parties.

The collection of shore fishes and invertebrates is naturally the largest. A few sweeps of the large seines give us barrels of fishes to select from, while invertebrates are easy to get at low tide.

We visited San Benito and Cedros islands, obtaining fair representations of the land forms peculiar to them. We shall do some deep-water dredging on the way to Cape St. Lucas, our next stop.

The climate could not be better. The awnings are spread, and I am sorry to see the days slipping by so rapidly.

LA PAZ, L. C., *March* 26, 1911

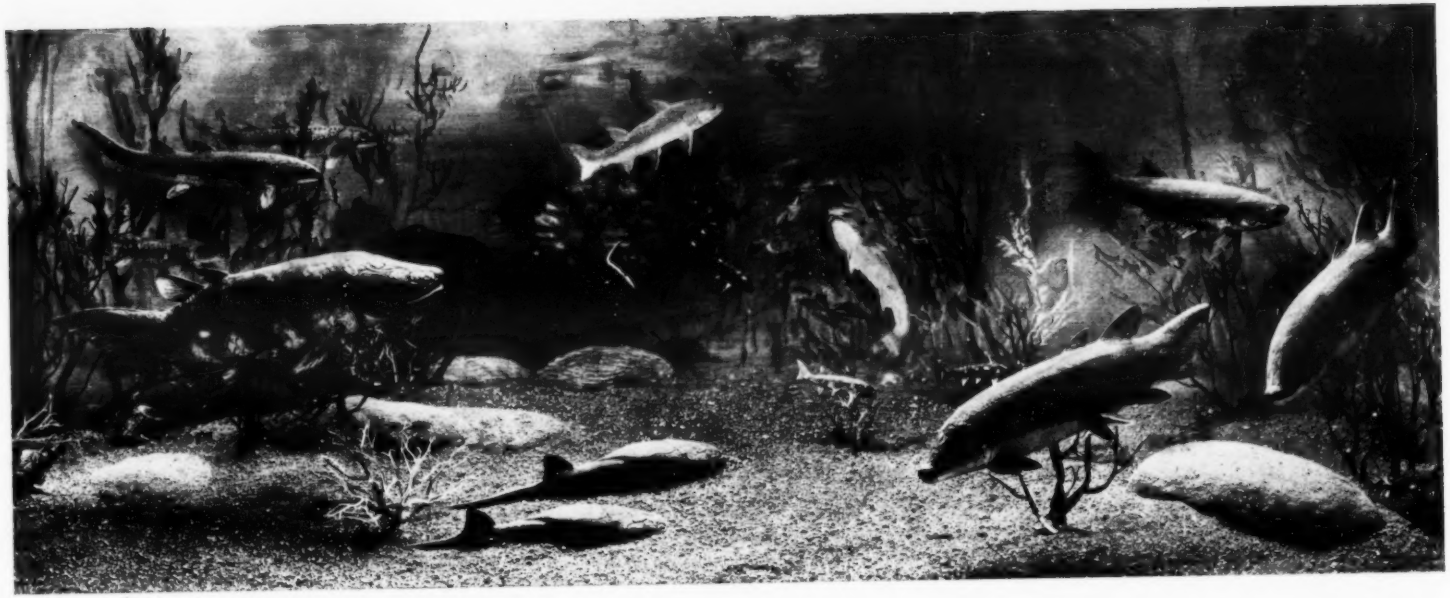
To-morrow evening we begin to move up the Gulf, taking in both islands and mainland. We now have about five hundred birds, with other land forms in smaller numbers. Going up the Gulf coast we shall make trials for mountain sheep and antelope. We have coyotes, rabbits, wood rats and mice in large numbers.

Dr. Rose will have the bulk of the collections. His boxes, crates and barrels of villainous cacti are filling the ship.

GUAYMAS, MEXICO, *April* 15, 1911

After leaving La Paz, the Albatross made a trip up the Gulf as far as Angel de la Guarda Island. From there we crossed the Gulf to Tiburon Island, then to San Estéban Island, coming from there to Guaymas to-day. We leave to-night for La Paz to get coal for the homeward voyage, calling at Santa Catalina, Espiritu Santo and Cerralvo islands. We have 600 birds, 200 mammals, perhaps 400 lizards and snakes. We are shipping to the New York Zoölogical Park by express to-day two crates of live snakes and large-sized lizards.

Our collections are largely from unexplored islands and undoubtedly contain new species. We shall pick up some good things on the islands between here and La Paz; then dredge in deep water all the way to San Francisco.



160 THE NEW "FOSSIL AQUARIUM" IN THE FISH GALLERY

A "fossil aquarium" which has now been put in place in the fish gallery gives an idea of what can be done in making these ancient forms appear as living, and the experiment has proved so successful that the series will be carried on, the means having already been provided in the Cleveland H. Dodge Fund. The plan is briefly this: to select the characteristic periods or "ages" of fishes and to make each period the theme of a reconstructed group. The completed group illustrates the typical "age of fishes," Devonian, in which the forms represented came from a single locality (Cromarty) and a single rock layer in the Old Red Sandstone of Scotland, with the best evidence therefore, that the creatures shown really existed side by side

THE NEW "FOSSIL AQUARIUM"

By Bashford Dean

FOSSIL fishes have a special meaning to those who seek light upon the history of the backboned animals. They occur in practically all layers of rock which yield fossils, having lived during a longer range in time than amphibians, reptiles and mammals; and it is well known that in the succession of the fishes from age to age, one can trace the changes which have taken place in their kinds and can show how some kinds became transformed into others, and thus how evolution proceeded.

However interesting this may be in theory, everyone will admit that it is a difficult matter to make clear to the Museum's visitor the lesson of fossil fishes, or even to display them in an attractive way. As a rule they appear in slabs of rock only as faint impressions of what they were in life, and he who enters the fossil fish gallery, if he has no knowledge of fishes, is not apt to examine these slabs of rock attentively and try to learn their meaning. He is more interested when he sees models of living fishes placed side by side with their fossil relatives, and he is still more interested if he sees a restoration, better in a cast than in a picture, of the fossils themselves. Such a restoration may in many cases be legitimately provided since the fossil fishes in their numerous specimens give the facts clearly upon which models can be prepared.

A "fossil aquarium" has now been put on exhibition in the fish gallery. With it is a label explaining the Devonian age, naming the fishes illustrated and telling how the more ancient groups are giving place to the more modern ones. Thus it is shown that the race of bony fishes, which represents about ninety-nine per cent of all living fishes, had not yet appeared; that on the other hand, the tribe of sturgeons and garpike, now almost extinct, made up about a quarter of all Devonian forms; that sharks, which are but a small fractional percentage of all living fishes, made up about one-third of all kinds then known; while finally, that the placoderms, a group long extinct and even of uncertain kinships, constituted forty per cent of the ancient fish fauna.

In preparing this "fossil aquarium," questions as to the nature of the water, the character of the bottom and its vegetation were investigated by Dr. Hussakof; the models of the fishes were prepared after restorations of specialists, but revised in numerous points in accordance with actual specimens. The colors could not, of course, be given infallibly; the best that could be done was to follow the nearest living relatives of the ancient forms. The design of the group and the color work were carried out by Mr. Charles R. Knight, and his results are realistic and attractive.

A TREE CLIMBING RUMINANT

By W. D. Matthew

IT seems somewhat paradoxical to imagine a ruminant climbing trees. There are stories of goats doing so, but these stories seem to be more or less apocryphal as far as any real climbing goes. Even the narrow sharp-pointed hoofs of a goat do not give the necessary grasp, and his limbs and feet are too stiff and limited in their motion. The only living members of the Ungulata or hoofed mammals which really climb trees are the coneys or hyracoids, especially the little tree-coney or *Dendrohyrax* of South Africa. This little animal, about the size of a rabbit and somewhat like one in appearance, is in many respects the kind of animal from which we conceive that all the Ungulates are descended, and like the earliest fossil Ungulates it has four separate digits on each forefoot and a rudiment of the inner digit. This kind of foot, and the more flexible limb with which it is associated, enables him to climb readily, to cling to branches and to live in the trees as well as on the ground. A similar adaptation is seen in most of the clawed animals or Unguiculates; while we find the limb and foot still further adapted to arboreal life in all of the Primates except man.

All living hoofed animals however, except the *Hyrax*, have the feet modified for walking and running upon the ground, in such a way as to gain in speed and endurance at the expense of a loss in flexibility of the foot, and none of them are able to climb trees. This is especially true of the Ruminants, in which the foot is very much specialized for running purposes, the metapodial bones of the two middle digits united into a single bone, the "cannon bone," and the two outer digits reduced to little rudiments known as "dew-claws," so that the animal walks and runs entirely upon the tips of the hoofs of the central digits. Compare this type of foot with the soft flexible sharp-clawed foot of a cat, and it is easy enough to see why a cat can climb a tree and a ruminant cannot.

The most primitive extinct ruminants had four separate digits of nearly equal size, and this condition is retained in all the Oreodonts, a family of pig-like Ruminants very common in North America during the Tertiary. But these Oreodonts were probably quite as exclusively terrestrial in their habits as the modern pigs and peccaries, in which the digits are also separate, although the side toes are much reduced in size.

The *Agriochœrus* however, while a member of the Oreodont family, and like them provided with ruminating teeth, had the limbs and feet modified in such a way as to enable it to climb trees as readily as a jaguar or other large cat. The hoofs are so narrowed as to be actually converted into a sort of claw; the articulations of the digits, wrist- and limb-bones are modified so as to give throughout limbs and feet the same flexible joints which we find in the cats and in all tree-climbing animals. The animal also differs from the other Oreodonts in that the front teeth are adapted for browsing upon leaves and twigs instead of cropping grass or other herbage.

These modifications from the usual Oreodont type appear to be adaptations for climbing trees to feed upon their foliage. This theory is embodied in the mounted skeleton of *Agriochœrus*. The animal is represented as walking out along a sloping branch of a tree, the branch being modeled in imitation of the fossil tree trunks often found in the Tertiary formations of the West. Like any large cat in a tree, he seems a little uncertain and shaky in his movements, and is inclined to cling tight with bent limbs, lacking the assured and confident step of a truly arboreal animal such as a monkey or lemur.

The *Agriochœrus* lived during the Oligocene epoch in Western North America, and then became extinct. Why, we do not know, but we may suppose that it was only partly arboreal, and that the handicap of its clumsiness upon the ground was more than enough to offset the advantage of being able to climb trees, when pursued by the improved races of Carnivora that were being evolved about this time.

BAGOBO FINE ART COLLECTION

By Laura Watson Benedict

THE tendency of a savage tribe to express its love for beauty in the form of decorative art is shown in some detail in a collection from the Bagobo tribe of southern Mindanao, recently installed in the Philippine Hall. Whether we examine basketry or wood-carving, textiles or embroidery or beadwork, we find a minute attention to form, a correct sense for color contrasts, a fine discrimination in decorative finish.

A Bagobo youth from the mountains of southern Mindanao in typical beaded dress. The Bagobo has a passionate love for decoration

The Bagobo tribe, numbering a few thousand, forms one of the groups of pagan Malays living clustered in villages over the mountains and foothills that range back from the west coast of the gulf of Dávao. They are a people of singular beauty, with clear golden-brown skin, earnest wide-open eyes, and mobile faces changing from deep seriousness in repose to sparkling vivacity in conversation.

In dress both women and men have unusually good taste and as fashions never vary from generation to generation, there comes no mandatory decree to change a good style. A more picturesque sight is rare to find than a party of Bagobo coming down a mountain trail in single file, walking with swift free step, the men in short trousers and open jackets, long black hair streaming over their shoulders, and richly beaded carrying-bags on their backs; the women in scant-bodied, scarlet-sleeved *camisas* and straight skirts woven in lustrous pictured patterns, and wearing their hair in glossy coils secured by beaded combs. Bright-colored kerchiefs adorn the heads of women and men; sparkling in their ears are ivory and inlaid plugs; around their necks hang pendants of finely carved seeds and braided beadwork and strung petals. Tassels of sweet-scented roots and toothbrushes of boars' bristles dangle from jacket and neckband, while bordering bag, basket and scabbard, and tinkling from hollow leglet or armlet are hun-

dreds upon hundreds of tinkling bells that announce the approach of the Bagobo.

If the Bagobo people could come to New York and see their belongings arranged in a great hall in sight of all visitors, their joy would be unbounded. When I made this collection in the Bagobo country, the people came flocking daily to my little nipa hut, less perhaps to visit me than to see their own things and identify each other's property and get current prices on jackets and trousers. Nowhere else in their villages could they find such a lot of Bagobo objects together, or test so many guitars and flutes, or examine such a bristling array of spears. That an American should want Bagobo specimens called forth no surprise; rather it seemed to them highly natural that every scrap of Bagobo workmanship from a richly decorated war shield down to some mean and filthy garment should be sought after and prized, for all the Bagobo admire every Bagobo product with a self-complacency that is both amusing and appealing. "Bagobo things, *Señora*!" came the password always uttered with an exultant note as a preliminary toward higgling the market with me.

Her leglets are made of tubes of brass which contain metal balls that roll freely and produce a tinkling sound as she walks

On reaching the Islands, I heard on all sides from white foreigners that it was almost hopeless to try to secure Bagobo objects, that the time was past for making a collection. It is true that a Bagobo parts with any one of his possessions reluctantly, and prizes each at double its material value because of intimate personal associations. But up to that time no account had been taken of certain emotional interests that had never before been appealed to, and that found expression as soon as a big collection began to grow. There was an undefined pleasure in knowing that over yonder in the *Señora's* house their things were perpetually in contact with other Bagobo things. Now when Atun made the rounds of my little museum and asked the usual questions: "Whose is this? How much did you

pay for it?" he had a left-out-feeling if he found nothing that represented himself. But if he could hold up just one article and say, "Kanak" (mine) or "My wife made it," he would give a radiant smile and sit down content.

Again, there was an appeal to the conservative tendencies of the people. More than one thoughtful Bagobo expressed a lively satisfaction at the prospect of a great Bagobo collection being carefully kept in an American museum forever. When the news spread there awakened a new feeling toward my work. One old woman secretly brought me a rare embroidered scarf, an heirloom that she handled tenderly, for her mother had worn it to hold the baby on her hip, and she said that it had carried many babies, that few old women remembered how to do that sort of needlework, and that she would never let it go, except that it might always be with the rest of the Bagobo things in America.

A scarf worn over the right shoulder and under the left arm as a hammock in which a child is carried on the mother's hip. This particular specimen is of fine old embroidery, now almost a lost art among the Bagobo

That piece of embroidery was done under conditions hard to comprehend. During the day Bagobo women have little time for fancy stitching, with all the cooking and the long climb to the river for water and the work of the loom — for the weaving must be done by daylight, as no native lamp can illumine the floor space covered by the hand loom. But when darkness falls sewing and embroidery can be done. A girl or young man fixes a leaf-wrapped resin torch in the cleft end of a forked branch that stands on the floor and serves as the native candelabrum. The torch is

The Bagobo man's carrying bag is worn on the back to carry flint and tinder case, betel nuts, food and tobacco. It is heavily beaded and each of the many small bells is hand made from a wax mold

lighted; promptly the room is filled with pungent smoke that sets a foreign eye to weeping, but the native woman, better adapted, sits stitching, completely absorbed, close to the torch that flares fitfully in the mountain wind coming in gusts through openings in the palm wall. Presently the flame flickers low until someone pulls down the edges of the green leaf envelope to expose a fresh surface of burning resin to the air. A girl ambitious to finish a new *camisa* will crouch in that dim light, cutting out tiny appliqué points and sewing them on, from six o'clock until after midnight, while the rest of the family and the guests are asleep on the floor in the same room.

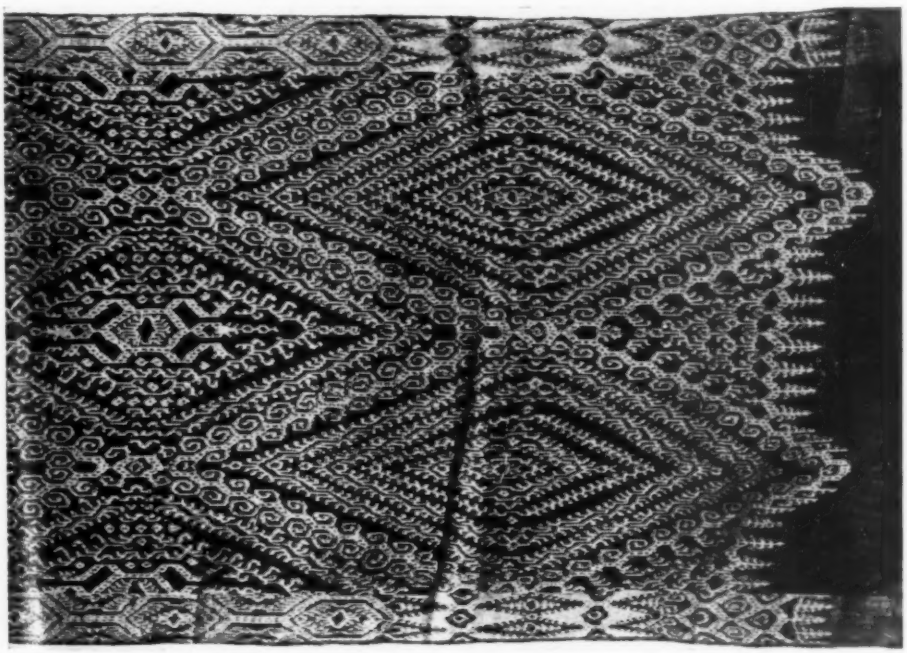
Yet, with all the sordid discomforts, there is an atmosphere of restful ontent in a Bagobo house. The members of a family group do their work with an air of leisurely satisfaction; they take time to gaze with keen nterest on one another's activities, as the men mold wax for the brass astings, make incised patterns in hard wood, or dexterously twist vege- ıble fibres into leglets, while the women are skeining hemp, whirling clay ots into form, or pounding rice with an accompaniment of dance and ng. And of course everybody is chewing betel nut. The whole picture

of industries and arts seems to grow out of the natural background, as much as the waving bamboos or the rustling hemp fields.

The culture of the Bagobo is largely based on bamboo, *abaca* and betel nut. Houses, rice boxes, water flasks, musical instruments are made of bamboo; the *abaca* fibre clothes the Bagobo; and betel nut is indispensable as stimulus, diversion, luxury, as well as the *sine qua non* for every form of social function and ritual ceremony. Decorative art also developed along the lines suggested by the natural products of the environment. The Bagobo, gifted by nature with a sensitive and artistic temperament, met the appeal of the environment with a swift response. But not only the physical

One is playing on the Bagobo woman's guitar while the other steps forth to dance. The photograph is reproduced to show particularly the figured stiff hemp skirts and the manner of wearing them

Hemp fibre as stripped from the stalk of the hemp plant; hemp fibre laced and tied in sections ready to dye; and dyed fibre with binding threads removed revealing the undyed portions. Each Bagobo woman learns from her mother and grandmother the different ways of tying which produce the different patterns in the weaving



A choice textile intended for the middle strip of a woman's skirt. The patterns were tied in the hemp fibre before dyeing and before weaving; the figures are in black and white with a border in miniature figures of red and white

factors of soil and altitude, sunshine and moisture, not only the hereditary tendencies of the Bagobo had a share in producing their rich and varied arts: another contributing element was the simple standard of living that satisfied them and thus left them free to follow their æsthetic interests. When one can step out, cut down a bamboo tree, split it lengthwise, and tie together the sections with rattan to make the house floor, and then sew palm leaves in lengths for the wall; when the furniture of that house consists of a loom, a family altar, a hen's nest, and three stones for a stove — then, other things being equal, there may come about an economic situation in which the whole tribe becomes a leisure class, to the extent that although everybody has to work yet every woman and every man has time to give play to artistic impulses. There, grouped in their mountain villages, fairly isolated from the conquests of Islam, merely grazed by Spanish civilization, the Bagobo people evolved their culture: they worked and played and worshipped and created beauty in rhythmic response to their environment — on, through the long centuries, until the shock of the American occupation changed their life, when the demands of labor set up strange standards of conduct, when the breaking up of mountain homes made havoc of arts and customs which had so slowly and so harmoniously developed.

Yet even now some excellent handiwork is done. The arts of the women — basketry, weaving, dyeing — hold their ground the longest. Particularly in weaving, where the Bagobo woman has attained a high skill in technique, there she continues to produce the classic patterns that she learned from her mother and from her grandmother. From time out of mind men stripped hemp, and women wove it into skirts and jackets and trousers. The Bagobo songs and ancient tales contain many references to the work of the weaver and to the beautiful [illegible] In southern Mindanao the hemp industry grew up naturally enough: nowhere in the world is there a climate better fitted to the needs of hemp, for there is continued warmth without excessive heat, and gentle daily showers furnish a natural irrigation throughout the entire year. That decorative art should have found its fullest expression in the products of the loom does not seem remarkable to anyone who looks at the freshly stripped fibre from the stalk of the hemp — creamy-white, glistening, strong, pliable; the mere handling makes the manual process a pleasure, and stimulates the woman artist to experiment with this or that new motive.

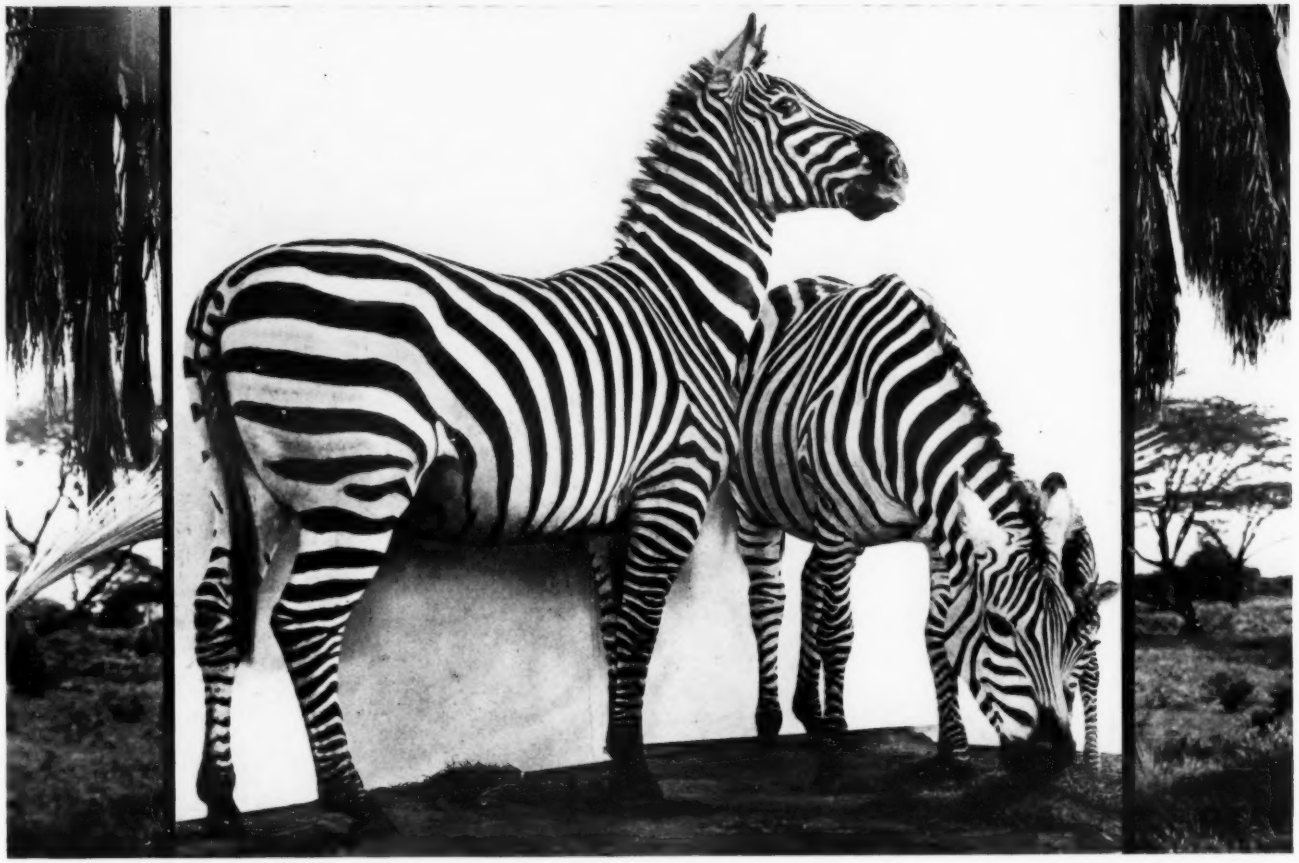
The more complex figures are made by tying the warp before the weaving. The hemp fibre is stretched on a long frame of bamboo, and then to make her pattern the woman artist picks out a cluster of strands at varying intervals: four strands here, seven there, two groups of strands near together, two others widely separated, and each cluster she binds and knots with short

lengths of hemp. She binds and ties these clusters so tightly and firmly that when the whole warp is afterward dyed no color can penetrate to the parts thus tied; these sections of the warp remain the natural creamy tint of the hemp. By this method a much wider freedom in design is secured than if the patterns were all made in the weaving itself.

The loom is the center of interest in every household, and its patterns tend to dominate the designs used in much of the wood carving and basketry. In the patterns on burden baskets the designs used in hemp textiles regularly appear: the surface of the basket is uniformly divided into three parallel fields running around the basket, like the three circular strips composing a

"Burden basket" to be carried on the back. In such a basket Bagobo women bring in the corn and potatoes from the field. The pattern is made by plaiting the rattan of natural color with that blackened with the burnt end of a resin torch

woman's skirt, and the standard designs of the skirt are reproduced with more or less accuracy in the corresponding sections of the basket, as far as the technique of the material permits. This tendency to seize upon textile motives for effects in rattan by no means implies that the art of weaving is necessarily older than the art of basketry. Among the Bagobo it is possible that both processes had their beginnings at nearly the same time. But early or late in the history of Bagobo art, the activity interests that cluster round the loom gave a strong stimulus to such an interpretation of basketry figures, as the familiar patterns of the weaver suggested.



172 THE ZEBRA GROUP IN THE AMERICAN MUSEUM. THE WORK OF MR. FREDERICK BLASCHKE, ANIMAL SCULPTOR

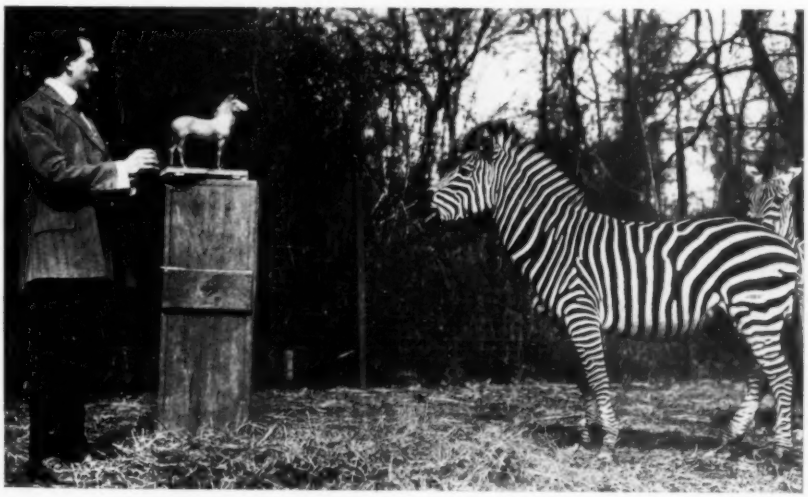
Measurements from life and the skins for this group were obtained by Mr. Herbert Lang on an expedition to British East Africa in 1906. The great nervous activity of the zebra is well shown in the alert pose of the male

Caliph came to America from the Nile when four years old. He was bought when about twenty years old (1888) by the Central Park menagerie for $6,000

Caliph died in 1908. He weighed between four and five tons, being the largest hippo ever recorded. The stretch of his open mouth was four feet nine inches

SOME WORK ON AFRICAN LARGE GAME BY AN ANIMAL SCULPTOR

TWO pieces of museum work completed some months ago have not heretofore received notice in the JOURNAL. They are a zebra group and a mount of Caliph, the hippo known for many years at Central Park. This work, a part of a series planned to cover the large game of



The sculptor made sketch models in clay from the Grant zebras at the New York Zoological Park preparatory to the work of mounting the Museum's Zebra Group

AT WORK ON THE FINAL MODEL

The coat of the Grant zebra is peculiarly rich in color and lustre. As the work on the model progresses, following the exact measurements made in the field, the skin is fitted over the clay at intervals to insure exact fidelity to the proportions of the original living zebra

Africa, has been done by Mr. Frederick Blaschke, who had training as a sculptor at Budapest under Professor Strobl, at Berlin in the Academy of Science, at Paris under Rodin and at Munich in the Academy of Drawing. The modeling and mounting of the hippo involved technical difficulties in the giant size of the animal and in the character of the skin adapted to water life, and the result is remarkable as an example of the application of modeling to the taxidermy work of a museum. The Zebra Group, representing a family of the Grant zebra, is a quiet but vigorous composition and shows Mr. Blaschke's skill in handling technique and his ability to interpret animal life.

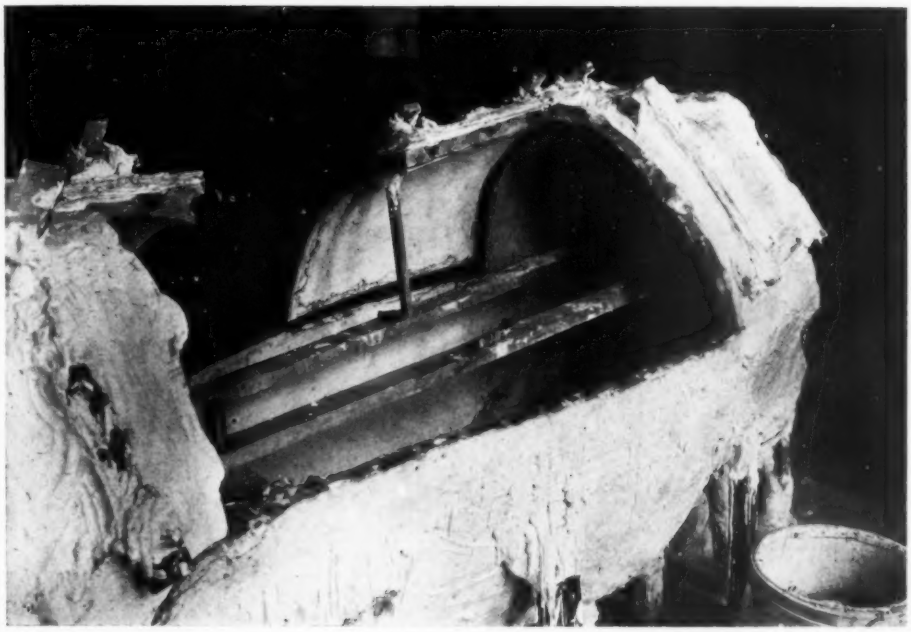
The work of a sculptor in a museum of natural history must stand for scientific truth, for accurate presentation — not of a few details, but of every detail. In this it differs from the work of an animal sculptor in art, where detail may be wholly subordinated to action or character. In animal sculpture for science however, it would be unfortunate if the art ideal of showing the essential spirit of an animal were lacking, most fortunate if the sculptor combined with his power of accuracy an appreciation and sympathy which would give him ability to see life from the given animal's standpoint and to set forth convincingly in spite of the intrusion of details the impression in his mind.

To use one of the examples at hand, a zebra must stand before the Museum's visiting public as a representative of a given genus and species, and it may be mounted to show haunt and typical habits; but there will be no confusion as to its scientific status if in addition to technical accuracy the work be done to give an understanding of this animal's characteristic timidity and nervous activity, and thus the finer conception of the zebra living be set forth and the strong human interest of a work of art realized. This conception is rather well achieved in the present zebra group notwithstanding that the group represents a composition of animals in repose. The group stands against the walls of the African Hall with no habitat constructed about it, yet there is so much alertness in the lines of the tense muscles of the male zebra that the suggestion is vividly apparent, to one who knows anything of wild African life, that this zebra is looking out over reaches of African country, alive to the possibility of an enemy's approach.

A new era for the natural history museum came when the taxidermy method gave way to the careful delineation of the sculptor. It is likely that this change marks only the beginning of a new era however, the work having very large possibilities in an age when animal sculpture is at the highest level yet gained in its history. Hence it is, that unusual interest will attach to work done in this line during the immediate future, especially

The clay model of Caliph. Making the model is the test of the sculptor's power of accurate work. It is based on studies of living hippos, previous measurements of the animal to be mounted, exact proportions gained from the skeleton, and on a knowledge of anatomy which will allow a modeling of the surface to suggest the living muscles underneath

Working on a plaster "piece mold" of the clay model Mr. J. C. Bell is a member of the staff of the Museum's Department of Preparation and is at present on the Oceanographic Expedition under Dr. Charles H. Townsend in the Pacific, making a series of plaster and glue molds of deep sea fishes and invertebrates



A portion of the piece mold with clay model removed. This has on its interior, of course, a perfect impression of the hippo model, and will give a positive or cast of this impression to soft plaster placed against thi; interior. The mold of the hippo was thirteen feet long

T e plaster cast, or manikin, partly uncovered as the piece mold is being removed. The cast is hollow, req dite strength being gained by the introduction of burlap into the plaster before it sets

with the Museum's plans in hand for okapi, white rhinoceros, elephant and still other mammal groups. No ability can prove too great to bring to the work, no training too thorough, no understanding of animal life too

CALIPH, THEIR OLD FRIEND, AT THE MUSEUM

The great hippo skin, weighing 1200 pounds, was shaved down to 68 pounds, and placed over the plaster manikin, the two fitting together in every wrinkle and fold

profound. In fact, the highest standard for the work is made imperative by the need of an adequate and permanent record of the world's large game, much of which is destined to become extinct.

THE CROW INDIANS OF MONTANA

By Robert H. Lowie

THE Crow Reservation has been for years the Mecca of innumerable white visitors who make pilgrimages to the historic site of the Custer Battle Field, a short distance from Crow Agency, or who paint or photograph the Indians. Nevertheless, this splendid people, whose lofty bearing and gorgeous dress were the admiration of the early explorers of the Plains, have preserved to a considerable extent the spirit of the old times and prove an endless source of delight to the visiting ethnologist.

Foremost among the religious observances of the Crow is the Tobacco Dance. This is not a single dance, but a cycle of beautiful and impressive performances beginning in the early spring when the seeds of the tobacco are sown and terminating with the gathering in of the crop. The plant thus cultivated is raised exclusively for its religious value, and is so highly prized that the Crow are willing to purchase a small bag of seeds at the price of a horse. Only duly adopted members of the several Tobacco societies are permitted to plant seeds in the Tobacco garden, where each society occupies a clearly defined plot and each couple initiated may drop seeds in two rows.

I was fortunate enough to witness an adoption ceremony held by one of the Tobacco societies. The members of the society together with the candidate to be adopted met in a tipi for the preparatory painting and singing. Here there were many songs and at each song the women rose, unwrapped their sacred bundles and danced. When, with much ceremony, the preparations were completed, all marched toward the adoption lodge, four stops being made on the way, in accordance with the sacred number of this people. On entering the large canvas-covered lodge, the drummers sat down at one side of an altar-like structure symbolizing the Tobacco garden. Continually during the formal and impressive ceremony, small groups of women, or more rarely of men, with their eagle-feather fans, sacred birds' head decorations, and weasel or otter skins, rose and gently swayed their bodies and moved their arms rhythmically back and forth. Toward noon the friends of the candidate heaped up blankets and other property in his behalf, as a payment to his adoptive "parent," as the person initiating him is called. By way of actual initiation of the candidate he was taken between two men standing at the foot of the altar and danced four dances with them, at the same time learning the songs. It was late in the afternoon when the closing song was chanted, after which all members seized little green sprigs and raised them aloft to symbolize and to promote the growth of the sacred Tobacco.

While the Tobacco ceremonies showed the serious side of the native

TOBACCO SOCIETY OF THE CROW INDIANS

On the way to the Adoption Lodge for the initiation of a candidate. Four stops are made according to the sacred number of these Indians while drums are beaten and each individual dances in his place with great ceremony

THE PROCESSION ENTERS THE ADOPTION LODGE

character, the annual performances of the clowns refuted the popular fallacy that the Indians are devoid of humor. A group of men departed from camp and dressed up in the worst possible clothing, blackening their bodies with mud and donning crude masks made of canvas. Also they kidnapped the ugliest horse they could find and enhanced its unattractiveness by trappings of repulsive-looking gunnysack. Then they returned to camp, and amused the spectators, stopping the play abruptly as soon as they were identified.

In following out one of the principal objects of my expedition, that is to collect information on the old military societies of the Crow, I discovered the former existence of a boys' military organization called *buptsake*, formed in imitation of the societies of adults. As an emblem of their dignity these prospective warriors carried tall staffs to which were attached wooden objects resembling bannerstones and covered with symbolical paintings. It was found later that the kindred Hidatsa Indians possess a corresponding society with a similar emblem, which was secured for purposes of comparison.

One of the curious social customs practised by the Crow, as well as by many other Indian tribes, is the "mother-in-law taboo." That is to say, a man is under no circumstances permitted to hold conversation with his wife's mother. Another strange regulation is that relating to the playing of practical jokes. A man is not permitted to jest with anyone he pleases, but is limited to the individuals whose fathers belonged to the same clan as his own father. Within this group, however, practically any liberty is allowable. If a man discovers that a "jokable relative" has committed some foolish or disgraceful act, he can publicly twit him with it, and the person derided must not get angry, but bide his time for some favorable opportunity to retaliate.

The older Crow are justly proud of the fact that they have invariably sided with the Government in the history of Indian warfare, and are eager to have their deeds remembered. For example, Gray Bull, one of the most noted warriors of the tribe, wished me to place on record the fact that he had saved the soldiers under "General Custer's brother" (possibly General Crook) from an attack by the Sioux. Many of the representatives of the younger generation have a very good knowledge of English and show a surprising interest in the affairs of the outside world. Thus one of my Crow friends subscribes for the *Literary Digest*, another was not afraid to struggle with the terminology of a law book in order to get at the meaning of some Indian regulation, and a third showed a vital interest in the elements of civics. These signs of intelligence and mental activity encourage us in the belief that the Crow, who have always taken the part of the United States against hostile tribes, will continue the good work of the past and will be able to contribute their share to the development of their great adoptive country.

MUSEUM NEWS NOTES

THE following have been elected recently to membership in the Museum:

Life Members, MESSRS. GEORGE B. CASE, DANIEL W. CORY, THEODORE DEWITT, NEWBOLD MORRIS, WILLIAM F. PATTERSON, GEORGE P. SHIRAS, PAUL CECIL SPOFFORD, FREDERIC C. WALCOTT, DRS. EVAN M. EVANS and GEORGE H. GIRTY and MRS. HENRY FAIRFIELD OSBORN;

Annual Members, MESSRS. EDWARD P. BECKWITH, HERBERT BUCKES, R. P. DOW, K. S. FALK, BERNARD H. FLURSCHEIM, H. A. FLURSCHEIM, JOHN C. HATELY, JOHN W. LOVELAND, MORRIS MAYER, HENRY S. REYNOLDS, WILLIAM J. ROBB, HORATIO S. SIMON, WILLIAM E. WOLFF, DR. WILLIAM HANNA THOMSON, MMES. E. G. JANEWAY and ROSA VETTEL, and MISSES GERTRUDE DODD, LAURA B. GARRETT, ELIZABETH S. HOYT and ELLEN KING.

AT the meeting of the Executive Committee on April 19, the following were elected to membership in the Museum in recognition of recent gifts

Fellow, Mr. D. C. Stapleton;

Life Members, Mr. F. D. Aller and Miss Frances E. Sprague.

COMMANDER GUY H. BURRAGE, U. S. N., who has coöperated with Acting Director Townsend in carrying out the plans of the Museum's expedition in Lower California, has been made a Life Member in recognition of his services.

SIR JOHN MURRAY, under the auspices of the New York Academy of Sciences and the American Museum, gave an address in the auditorium of the Museum April 24 on the subject "Depths of the Sea." Sir John Murray is world authority on all that pertains to Oceanography, having taken part in the Challenger and other deep sea expeditions. To his inspiration is due the founding of the Oceanographic Museum of Berlin which in turn led to the establishment of the Oceanographic Museum at Monte Carlo and the Oceanographic Institute at Paris. It is hoped that a similar line of work may be carried on in the United States and to this end it has been decided to set aside in the planned extension of the Museum building two halls for the subject of Oceanography and closely allied science.

Two collections of birds have been placed on deposit in the American Museum. One of these, the property of Dr. Jonathan Dwight, Jr., of New York City, numbers about 30,000 specimens, ranking as one of the largest private collections in this country. It is especially valuable in showing

plumages and molts of North American species. The second collection belonging to Dr. Leonard C. Sanford of New Haven, Connecticut, contains about 400 specimens, largely non-passerine birds, and includes rare species especially among the albatrosses and petrels, some of which are not represented in the American Museum collections.

At the meeting of the Executive Committee on April 19, Dr. Louis Hussakof was promoted to the position of Associate Curator of Fishes.

Mr. Herbert Lang, leader of the Museum's Congo Expedition, sends a report from Niangara under date of January 14 with an account of successful work, especially among the Mangbetu. The collections have been greatly increased, gaining twenty-two additional species of mammals, twenty of reptiles and batrachians and sixty of birds since the previous report from Medje. The expedition planned to leave Niangara on January 18 with a caravan of one hundred men, proceeding to Dongu, Foradje and Aba where it was hoped to arrive in early February. The report included a series of photographs which unfortunately arrived too late to find place in the Journal.

The Museum has issued a *Guide Leaflet* by Dr. C-E. A. Winslow, Curator of Public Health, on the subject "Protection of River and Harbor Waters from Municipal Wastes." This leaflet will be on sale during the exhibition of the Metropolitan Sewerage Commission, postponed from April to the latter part of May, and explains the many models the Department will display at that time.

A habitat group fifteen feet long has been planned to receive the unusually fine specimens of wild boar presented to the Museum by Mr. Walter Winans. The group has been designed by Mr. Frederick Blaschke of the Department of Preparation, who has had experience boar hunting in Germany.

The Museum has recently purchased a skin and skeleton of the buffalo of Mindoro Island, *Anoa mindorensis* Steere, called by the natives "tamarau." There are few specimens of this buffalo in American and European museums, for although abundant in Mindoro, the animal is rarely taken because confined to dense jungle and fierce under attack. A "tamarau" skull was secured for the Museum by Mr. Roy C. Andrews while in the Philippines. The new specimens come through the efforts of Mr. A. L. Day of Manila.

THE Guide Leaflet Series of the Museum has been increased by a pamphlet of one-hundred pages issued by the Department of Woods and Forestry and based on the Jesup Collection of Woods. While primarily dealing with tree structure and growth and containing a planting guide for thirty-four of the most valuable trees of North America, this leaflet has been made to cover briefly a wide field in the practical aspects of forests and forest industries in order not to lack in suggestiveness along the various lines of interest of the Museum's visitors.

THREE very important anthropological collections have been purchased. One from the Jesup Fund, is a series of rare objects from the Tsimshian Indians of the North Pacific Coast collected by Lieutenant G. T. Emmons. This fills practically the only gap in our series from that important culture area.

The second collection, made by Dr. Carl Lumholtz, in the little-known borderland along the Mexican boundary of Arizona, was purchased from the Primitive Peoples of the Southwest Fund. Among the unusual pieces in this collection are the costumes of a fool dancer, consisting of a mask, a crude and useless bow and other absurd trappings. This is of especial interest since this ceremonial character seems to connect the Papago culture with that of the Plains. Among other things may be mentioned a series of wooden plows introduced into Mexico from Europe by the early Spanish explorers. The Papago are the southern representatives of the Pima stock and were found still practising the art of basketry for which the Pima proper were at one time famous. The collection contains excellent samples of this almost extinct textile art.

The third acquisition, gained through the Jesup Fund, is the General U. S. Hollister collection of Navajo blankets. In this series there are sixty-six pieces, some made before 1850. In materials and dyes there is a full representation: eleven blankets of bayeta, one of natural wool, eight of native dyes, seven of Germantown yarn, twelve of other commercial yarn, and eighteen in aniline dyes. The four varieties of weave practised by the Navajo are fully represented. There are also a few exceptional blankets, one of which represents in its design the Corn God copied from the sand paintings of altars of the Navajo. This collection, jointly with the series recently presented by Mrs. Sage and those belonging to the Lenders and Tefft collections recently presented by Mr. Morgan, give us a series of Navajo textiles fully representative both as to technique and design.